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Data Analysis

Instructor: Dr Marjan Petreski
Course number: DOCT 7002
Type of course: general course
Semester: Fall 2016
Level of course: 7
Credits: 10 ECTS
Learning hours: 250
Prerequisite: none

Schedule hours: 2-4; 9-11 February 2017
Room: tbc
Meeting hours: Mon 12:00-13:00 or by appointment
Instructor's contact details: marjan.petreski@uacs.edu.mk

Course description
The course aims to review and complement foundation statistical knowledge and to establish the context for a range of methods, used in the analysis of simple and complex systems. Reasonable proficiency in algebra and the ability to grasp concepts of probability and its importance are predominantly required. The emphasis is on an intuitive understanding of the principles and a practical ability to apply these to data examples drawn from diverse systems, rather than mathematical sophistication.

Required texts
Levine, D.M., Stephan, D.F., Timothy, K.C. and Berenson, M.L. (2011) Statistics for managers using Microsoft excel. Sixth ed. Pearson.
Additional literature may be suggested by the instructor.

Supplementary reading
Davenport T.H.and Harris J.G.: 2007, Competing on Analytics, Harvard Business School Press, Boston, Mass.
Davenport T.H. and Harris J. G. and Morison R.: 2010, Analytics at Work: Smarter Decisions, Better Results, Harvard Business Press
Anderson, D., Sweeney, D. and Williams T. (1999) Statistics for Business and Economics, 7th edition, South-Western College Publishing (or more recent edition of this book).
McClave, J.T., Benson, P.G. and Sincich, T. (2007) Statistics for Business & Economics (10th Edition), Prentice Hall

Learning outcomes
By the end of this course, students should be able to:
1. 'demonstrate' that they understand different levels of measurement and data types
2. 'demonstrate' that they understand and apply underlying probability principles and distribution examples
3. 'demonstrate' that they can distinguish between descriptive and inferential statistical quantities in the theory and practice of statistics and in data analytics
4. 'demonstrate' that they appreciate the scope and robustness of common analytical methods for one to many samples

5. use a range of analytical statistical techniques and interpret outcomes
6. 'demonstrate' that they can apply techniques to a range of illustrative examples and case studies in complex world systems

Course delivery

The course will be delivered through a combination of lectures, including guest lectures by professionals and experts, practice activities, pair and group work activities, case studies, class discussions, individual or group presentations, supervised and independent research. Students are expected to be independent learners, participate actively in the learning process, and show a reasonable level of interest and enthusiasm about the course. Consequently, **students are expected to read the assigned texts prior to class discussion.** All assignments including homework should be completed by agreed deadlines and failing to meet the deadline will result in a grade F (Failure) for those particular assignments.

Examination structure and assessment

There will be no exam in the standard sense. Students' performance will be assessed in accordance to the subject learning outcomes through class participation activities, homework and a project. The project will be assessed according to specific criteria described in the task description. Students are encouraged to use the EBSCO database when preparing their homework and class project.

The grading scale used to determine course grades will be:

Grading criteria

Grading points	%	Quality
A	96-100	4.00
A-	90-95	3.67
B+	87-89	3.33
B	83-86	3.00
B-	80-82	2.67
C+	77-79	2.33
C	73-76	2.00
C-	70-72	1.67
D+	67-69	1.33
D	63-66	1.00
D-	60-62	0.67
F	0 -59	0.00

The weighting of the assessment components will be:

Activity	*%*
Attendance	10%
Class participation & homework	20%
Project: portfolio	70%

Notional learning time required:

Learning	Hours
Class lectures	22
Exam time	3
Assignment/project completion	100
Study time including exam & reading preparation	125
Total learning hours	**250**

Course outline

Lecture/day	Topics	Book, Chapter, page:
1.	Describing data Some basic and advanced excel function	Levine et al. Chapters 1-3
2.	Normal probability distribution Samples and sample distribution	Levine et al. Chapters 6-7
3.	Confidence interval estimation Hypothesis testing Basics of regression Excel-based exercises	Levine et al. Chapters 8-9, 13
4.	Multivariate regression design Excel-based exercises	Levine et al. Chapters 13, 14
5.	Multivariate regression design Excel-based exercises	Levine et al. Chapters 14
6.	ANOVA Chi-square and nonparametric tests Excel-based exercises (XLSTAT) Introduction to some databases	Levine et al. Chapters 11, 12

Common Professional Components (CPC)

1) Functional Areas:	
Marketing	
Business Finance	
Accounting	
Management (Organizational Behaviour – Human Resources Management + Operations Management)	
2) The Business Environment	
Legal Environment of Business	
Economics	
Business Ethics	
Global Dimension of Business	
3) Technical Skills	
MIS/IT Computing	2
Statistics/Quantitative Techniques	15
4) Integrative Areas	
Business Politics/Strategies	
Internship/Practical (Comprehensive or Integrating Experience…..)	3
TOTAL HOURS	**20**

Class attendance and participation
- Attend every class and arrive on time. Attandance is compulsory. UACS has additional attendance policies regarding eligibility for exams in the Student Handbook.
- Students are responsible for everything that is announced, presented, or discussed in class.
- Students must actively participate by contributing to classroom discussions and asking questions.
- Students must read the assigned texts before coming to class.
- Students must bring the appropriate materials (textbooks, paper, pens, etc) to every class.

- Announcements and materials for each class will be regularly posted on the Share Point portal and students are obliged to consider them before coming to class.

Classroom behavior
The classroom will be an academic and respectful environment. Disrespectful remarks or other inappropriate behavior will result in a daily mark of 'F' and/or removal from the classroom. The UACS policy concerning inappropriate behavior is in the Student Handbook. **The use of mobile phones is not allowed while class is in session.** The language of instruction is English, and all conversation and correspondence must be in English.

Academic honesty
Students must do their own work. Cheating or copying of any kind will not be tolerated on exams, papers, homework, or any other assignments.

Plagiarism
UACS does not tolerate plagiarism, which is the copying of another person's work without giving the author credit. Plagiarism of any kind will result in a grade of 'F' for the course. The UACS policy on plagiarism is in the Student Handbook.

Late work
Having work completed on schedule is an important part of being responsible. Assignments are due at the beginning of class on the due date. **Late work will not be accepted for any reason.** Failure to submit the project or deliver the class presentation in due time will result in a mark of '0' (F).

(Nov 2016)